EPA/ROD/R04-98/103
1998

EPA Superfund
Record of Decision:

STAUFFER CHEMICAL CO. (TARPON SPRINGS)
EPA ID: FLD010596013
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TARPON SPRINGS, FL
07/02/1998

EPA 541-R98-103
<IMG SRC 981030>

Record of Decision

The Decision Summary
Operable Unit 1

Stauffer Chemical Tarpon Springs Site
Tarpon Springs, Pinellas County, Florida

Prepared By:
U.S. Environmental Protection Agency
Region 4
Atlanta, Georgia

RECORD OF DECISION

DECLARATION

SITE NAME AND LOCATION

Stauffer Chemical Tarpon Springs Site
Tarpon Springs, Pinellas County, Florida

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for Operable Unit 1 at the Stauffer Chemical Tarpon Springs Site in Tarpon Springs, Pinellas County, Florida, which was chosen in accordance with the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments Reauthorization Act of 1986 (SARA), 42 U.S.C. º 9601 et seq., and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the Administrative Record file for this site.

The State of Florida, as represented by the Department of Environmental Protection (FDEP), has been the support agency during the Remedial Investigation/Feasibility Study process for the Stauffer site. In accordance with 40 CFR º 300.430, FDEP, as the support agency, has provided input during this process. Based upon comments received from FDEP, it is expected that concurrence will be forthcoming; however, a formal letter of concurrence has not yet been received.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in the Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

This is the first of two operable units planned for the Site. This operable unit addresses the source of the soil and groundwater contamination by treating and containing the source material. The second operable unit will address the contaminated groundwater in the surficial aquifer. The diesel fuel product identified during the groundwater investigation will be addressed under the State of Florida's Underground Storage Tank Program.

The major components of the selected remedy include:

- Limited excavation of radiologically and chemically contaminated material/soil which exceed Residential Cleanup Standards.

- Consolidation of contaminated material/soil in the main pond area, slag area, and/or other areas on-site. Top Cover Caps which meet the Florida Administrative Code º 62-701.050 will be placed over the Consolidation Areas. The movement of contaminated soil/waste will be limited to minimize the generation of fugitive dust and to prevent the creation of additional threats to human health and the environment.

- Institutional Controls must be placed on the site. Institutional controls must include deed restrictions, land use ordinances, physical barriers, and water supply well permitting prohibitions. These restrictions will limit access to the site and prohibit the disturbance of the remedy.

- In-situ Solidification/Stabilization of pond material and contaminated soil below the water table will be required in the consolidation areas on-site. The consolidation areas will be delineated in the Remedial Design Report.

The total present worth cost for the selected remedy as presented in the Feasibility Study is $9,356,000. The construction of multiple consolidation areas may increase the present worth cost of this remedy.

STATUTORY DETERMINATION

The selected remedy is protective of human health and the environment, is cost effective, and it complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces the toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous source material remaining on-site above health-based levels, a review will be conducted within five years after the commencement of remedial action and every five years thereafter to ensure the remedy continues to provide adequate protection of human health and the environment.

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1.0 SITE LOCATION AND DESCRIPTION

The Stauffer Chemical Tarpon Springs Superfund Site (Site) is located on Anclote Road in Tarpon Springs, Pinellas County, Florida. The location of the Site, taken from the U.S. Geological Survey (USGS) Topographic Map prepared in 1987, is presented in Figure 1-1 (not to scale). The Site is situated along the Anclote River, which flows into the Gulf of Mexico approximately two miles downstream of the Site. The town of Tarpon Springs is located approximately 2 miles southeast of the Site. The Site comprises an area of approximately 130 acres and includes the former phosphate processing area, elemental phosphorus production facilities, and office/ administrative buildings. While operating, the plant utilized a system of seventeen waste ponds on-Site. Currently, these unlined ponds contain waste and no water. Land use in the surrounding area includes light industrial, commercial, and residential. Also, there are some undeveloped areas near the Site. The Site is generally flat with an average elevation of 10 ft above sea level.

The most significant surface water bodies near the Tarpon Springs Site are the Anciote River which is located along the Site's southern and western boundaries and the Gulf of Mexico which is approximately 2 miles from the Site. Pinellas County and the Site are underlain by two primary aquifers, the surficial aquifer and the Floridan aquifer. The depth to the surficial aquifer groundwater is relatively shallow. The thin nature of the surficial aquifer limits its usefulness as a drinking water supply, however, the aquifer provides water for irrigation purposes. The surficial aquifer is separated from the Floridan aquifer by a semi-confining, relatively continuous bed of clay to sandy clay. The Floridan aquifer, consisting of a thick sequence of carbonate (limestone) rocks which are hydraulically connected, provides most of the public water supply for Pinellas County. There are no active residential, or commercial wells either on-Site or between the Site and the Anclote River; therefore, there are no groundwater users on-Site or downgradient of the Site.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Stauffer Chemical Company Tarpon Springs Plant (the "Plant") produced elemental phosphorus using phosphate ore mined from deposits in Florida. The Plant was originally constructed and operated by the Victor Chemical Company, which began production in 1947. Stauffer Chemical Company obtained the Plant from Victor Chemical in 1960 and operated it until shutdown of operations in 1981. In 1983, the decision was made to decommission and dismantle the Plant permanently. Most of the Plant's former process buildings have since been dismantled. In 1997, the Stauffer Management Company (SMC) was formed as a result of a divestiture of the Stauffer Chemical Company.

In the February 1992 Federal Registry Notice, the Stauffer Chemical/Tarpon Springs Site was proposed for listing on the National Priorities List (NPL) by the United States Environmental Protection Agency (U.S. EPA). On July 28, 1992, SMC voluntarily entered into an Administrative Order on Consent (Consent Order) with U.S. EPA Region 4 (EPA), which requires the performance of a Remedial Investigation and Feasibility Study (RI/FS). The RI and FS final reports were completed and approved in March of 1996.

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Several field investigations b,sultants were conducted at the Site. These investigations began with sampling of on-Site groundwater wells in 1974. Beginning in 1987, additional, multi-media investigations were conducted by various parties. To the extent possible, the studies were utilized in the Remedial Investigation.

In addition to the RI field activities, a Contamination Assessment (CA) investigation was conducted at the Site in 1993. The CA was performed for the Florida Department of Environmental Protection (FDEP) in response to reported soil and groundwater contamination in the vicinity of two former above ground fuel oil storage tanks removed in August 1992. The cleanup of these areas in a coordinated approach with this operable unit will proceed under the State of Florida's Underground Storage Tanks Program.

Black & Veatch Waste Science and Technology Corporation (BVWST), under contract with EPA), prepared the Final Baseline Risk Assessment (dated May 18, 1994) for the Site. EPA issued Addendum I (dated June 10, 1994) to revise the Final Baseline Risk Assessment acknowledging the conservative nature of the assumption that all Phosphorus present was considered to be the most toxic Phosphorus (Elemental Phosphorus). In response to this addendum, additional samples were collected and analyzed by Roy F. Weston Incorporated, the SMC's consultant in September of 1996. The purpose of this sampling event was to confirm presence or absence of Elemental Phosphorus in Site media. EPA was present to oversee this sampling event. Based on the results of the Phosphorus Sampling Program conducted by WESTON, EPA issued Addendum II - Elemental Phosphorus and Diesel (February 2, 1996). Also, EPA presented Addendum IIA - Elemental Phosphorus in Surface Water and Sediment on February 22, 1995. Based on the confirmed absence or presence of Elemental Phosphorus in discrete samples collect in each Site media, the risk assessment was revised to re-evaluated risk levels in Site media. As a result of this additional work, the Final Revised Baseline Risk Assessment was issued by EPA on July 21, 1995.

The Feasibility Study (FS) was prepared by WESTON in accordance with the Consent Order. EPA reviewed and approved this FS. As part of the FS, an assessment of the environmental impact created by the Site was performed through a comparison of the concentration of contaminants at the Site with federal and state Applicable or Relevant and Appropriate Requirements (ARARs) and Site-specific criteria developed in the Baseline Risk Assessment.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

All basic requirements for public participation under CERCLA Sections 113(k)(2)(B)(I-V) and 117 were met in the remedy selection process. The first fact sheet on the Site was distributed in February 1993. Since that time, a community relations plan was developed and implemented at the Site. An information repository was established in March 1993, at the Craig Park Branch of the Pinellas County Public Library, Spring Street, Tarpon Springs, Florida. The Remedial Investigation (December 1993), the Revised Final Baseline Risk Assessment (July 1995), Feasibility Study (January 1996) and the Proposed Plan (March 1996) were released to the public and continue to be available for public review. These documents have been incorporated in the Administrative Record for the Site. A copy of the Administrative Record, upon which the remedy is based, is available to the public at the information repository. In addition, the Administrative Record and the Site files are available for review at the EPA Region 4 offices in Atlanta, Georgia. Notices of the availability of these documents were published in the Tampa Tribune and the St. Petersburg Times on May 26, 27, and 29 of 1996.

On May 29, 1996, EPA presented its preferred remedy for the Stauffer Chemical Tarpon Springs Superfund Site during a public meeting at the Gulfside Elementary School, Holiday, Florida. At this meeting, representatives of EPA answered questions about the sampling at the Site and the remedial alternatives under consideration.

A 90-day public comment period was held from May 29, 1996, through August 29, 1996. At the request of the public, this comment period was extended for an additional 30 days. The public comment period concluded on September 30, 1996. EPA's response to comments which were received during the comment period are contained in Appendix A of the Record of Decision.

In broad terms, the results of the assessment for surface soil were as follows:

- The main contaminants of concern for soil were radiological constituents, mostly located in the former slag processing area, railroads, road, and parking lots. In addition, some chemical contaminants including arsenic, antimony, beryllium, cadmium, chromium, thallium, PAHs, and fluoride, were identified. For a complete list of Potential Contaminants of Concern refer to Table 6- 1.

- The pond material were not evaluated from a risk standpoint in the Final Baseline Risk Assessment (BVWST, 1994). The risk assessment assumed that this material would be treated or remediated. Radiological levels detected in the ponds exceeded residential and commercial use standards. Refer to Table 6-1 Potential Contaminants of Concern for a complete list of contaminants.

Contaminant detection tables for all media are presented as Table 5-1, 5-2, 5-3, and 5-4. These tables present the sampling results from the Remedial Investigation for the media of soil and pond material.

5.6.2 Substances Detected in Surface Water and Sediment

Surface water and sediment samples were collected from the Anclote River directly adjacent to the Site (located directly south and south-west of the Site property boundary). Surface water and sediment samples were collected in a two phase sampling event. The first phase focused on the comprehensive sampling of the Anclote River's surface water and sediment. The sample locations were selected to include areas upstream, areas downstream, and areas adjacent to the Site. The second phase of sample collection included a focused investigation of the sediment in the Myers Cove area adjacent to the Site. During the RI, a total of 15 surface water and 27 sediment samples were collected. Refer to Table 5-1, 5-2, and 5-3.

The results of the RI sampling documented that Site-related contamination was not detected in surface water above background (normal) levels. Only mercury and cadmium were detected (once each) above the National Oceanic and Atmospheric Administration (NOAA) Effect Range-Low (ER-L) guideline values, at sediment locations in Meyers Cove. Both contaminants did not exceed the NOAA Effects Range-Medium (ER-M) guideline values. For further detail, refer to the final Remedial Investigation Report (WESTON 1993).

5.6.3 Air Monitoring

Air monitoring results obtained during the RI field work indicated that airborne volatile organics compounds were not problematic at the Site unless construction activities are in progress. Prior to excavation, drilling, and sampling activities, on-Site workers tested the air quality with either a flame ionization detector (FID) and/or an organic vapor analyzer (OVA). Instrument readings were taken continuously at each drilling location for monitor wells. In addition VOCs were not detected during air monitoring conducted to support the health and safety plan. Elemental Phosphorus is the only contaminant of concern that may present a problem since it may ignite spontaneously when exposed to the atmosphere. Supported by historical information and the results of the RI field work, EPA has drawn the conclusion that airborne contaminant transport is not a significant migration pathway at the Site. The exceptions to this statement would exist when the pond and other contaminated areas are excavated or disturbed. This scenario may cause the Elemental Phosphorus to be exposed to the atmosphere. During the Removal Action construction activities on-Site, asbestos was detected at levels below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit. Even though the asbestos levels are below the Permissible Exposure Limits, EPA will add asbestos to the list of Contaminants of Concern. This decision is based on input and concerns expressed by the community. Additional

samples will be collected and analyzed for asbestos as part of the Remedial Design.

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6.0 SUMMARY OF SITE RISKS

CERCLA directs EPA to conduct a baseline risk assessment to determine whether a Superfund Site poses a current or potential threat to human health and the environment in the absence of any remedial action. The baseline risk assessment provides the basis for determining whether or not remedial action is necessary. This risk assessment also provides the justification for performing the remedial action. Based upon this analysis, it was determined that the Site does pose a current or potential risk.

Site risks are summarized in the Revised Final Baseline Risk Assessment - Part A and B (BVWST-July 21, 1995), which was submitted as part of the Remedial Investigation, consist of three major sections: Risk Assessment - Chemical, Risk Assessment - Radiological, and the Baseline Ecological Risk Assessment. Chemical risks and radiological risks are discussed separately due to the complex nature of contamination at this Site. Following the discussion of each risk category, the risks posed by the aggregate categories will be summarized.

The major risks currently associated with the Site are inhalation, ingestion, and dermal contact with contaminated soil and slag. Actual or threatened releases of hazardous substances from the Site, if not addressed may present an imminent and substantial endangerment to human health, welfare, or the environment.

6.1 Risk Assessment Overview - Chemical

The chemical health threat at the Site is from heavy metal contamination. The major chemicals of concern are arsenic which is a known carcinogen and elemental phosphorus which is reactive when exposed to the air. See Table 6-1 for the list of Contaminants of Concern for the Stauffer Chemical/Tarpon Springs Site. Based on additional sampling results, and comments on the proposed plan asbestos and arsenic have been added to the list.

EPA Region 4 does not consider direct exposure to subsurface soil to be a standard scenario that should be evaluated in the baseline risk assessment for protection of human health and the environment. Therefore, chemicals of potential concern were not selected for subsurface soil; however, this medium will be evaluated for the protection of groundwater.

Table 6-1 Summary of Potential Contaminants of Concern

CHEMICAL	SOIL	SURFACE WATER	SEDIMENT	POND MATERIAL
Aluminum				
Antimony	X			X
Arsenic	X	X	X	X
Barium		X		
Beryllium	X		X	X
Cadmium	X			X
Chromium	X			X
Cobalt	X			X
Copper				X
Fluoride	X			X
Lead	X		X	X
Manganese	X			X
Mercury	X	X		X
Nickel				
Elemental Phosphorus	X			X
Selenium				
Thallium	X			X
Zinc				
2-Methylnaphthalene	X			
Acenaphthylene	X			
Acetone		X		
Benzo(a)anthracene	X			X
Benzo(a)pyrene	X			
Benzo(b)fluoranthene	X			X
Benzo(g,h,i)perylene	X			X
Benzo(k)fluoranthene	X			X
Chrysene	X			X
Dibenzofuran	X			
Dibenz(a,b)anthracene	X			
Indeno(1,2,3-cd)pyrene	X			X
Phenanthrene	X			X

Table 6-7 Ecological Summary of the Contaminants of Concern

Contaminants of Concern for Ecological Risk	
Aluminum	Acenaphthalene
Arsenic	Anthracene
Cadmium	Benzo(a)pyrene
Copper	Bis(2-ethylhexyl)phthalate
Iron	Chrysene
Mercury	Dibenz(a,h)anthracene
Nickel	Fluorene
Phosphorus	Fluoranthene
Silver	Phenanthrene
Thallium	Pyrene
	Zinc

The overall risk to the extended community on or immediately adjacent to the Stauffer Chemical Site is considered low to moderate. Causes for concern are that several contaminants currently exceed screening values in both sediment and surface water. In addition several contaminants were detected in shallow groundwater samples at relatively high concentrations and would be expected to contribute to the overall contaminant load in the adjacent wetland and deepwater habitats. Moderating the overall risk to the extended community is the dilution effect of the Anclote River and the tendency of the wetlands adjacent to the Site to partition some contaminants to deeper sediments, restricting their effect to a limited area. Based on information currently available to the EPA contractor, the BERA was developed primarily based on chemical contaminants since minimal information was found on the ecological impact of radiological contamination. All available information concerning the ecological impact of chemical and radiological contamination was considered in the decision making process. Further ecological or eco-toxicological investigation is not warranted at the Site.

6.5 Cleanup Levels

Cleanup levels for the Site were established to ensure that any person exposed in the future will not be exposed to unsafe levels of Site-related chemicals. Cleanup levels are either the Federal Maximum Contaminant Limits (MCLs), other Applicable or Relevant and Appropriate Requirements (ARARs), or risk-based concentrations. At the Site, EPA requires that soil be remediated up to a 10 -6 residential risk level for cancer causing contaminants and a Hazard Index (HI) of 1 for non-carcinogenic chemicals. For the radiological contamination, a ARAR is used as the cleanup standard. These levels are consistent with the National Contingency Plan (NCP) and EPA requirements for cleanup levels of carcinogenic chemicals with in the 10 -4 to 10 -6 risk range and are protective of human health and the environment in a residential setting. This risk range of 10 -4 to 10 -6 means that exposure to Site-specific contaminants as defined as in the risk assessment would result in an estimated increase in an individual's chance of developing cancer ranging from one in ten thousand to one in a million. For non-cancer causing risks, EPA compares the highest dose known to be safe (not cause harmful effects) to the estimated dose from exposure to levels found on-Site. These comparisons were used to develop cleanup levels for Contaminants of Concern for the soil/waste at the Site. Elemental phosphorus is a CERCLA listed Hazardous Substance.

Table 6-8
Cleanup Standards: Remedial Goals

Soil/Waste Contaminant	Maximum Concentration Detected (mg/kg)	Remedial Cleanup Goals (mg/kg)
Arsenic	127	#
Antimony	32.3	28.1
Beryllium	1.6	0.192
Elemental Phosphorus	0.854	1.4
Thallium	13.4	1.4
Radium-226 (Lead-210)*	73.8 pCi/g	5 pCi/g
Total CPAHs**	-	0.089

* Note that this cleanup level is measured above the background (normal) concentration. The background (normal) concentration will be established during the Remedial Design.

** Total CPAHs include Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene.

\# EPA Region 4 regulates arsenic in soil as a systemic toxicant with a reference dose of 0.0003 mg/kg/day. The safe soil level for residential use that would not exceed this RfD for a child was determined in the Site's risk assessment to be 21.1 mg/kg. EPA also considers arsenic to be a carcinogen in the form that may occur in drinking water and has included an oral slope factor in its IRIS database. The application of the slope factor here, though not considered appropriate, would yield a calculated safe soil level for a child at the most protective 10 -6 risk level of 0.46 mg/kg. The latter soil cleanup level for arsenic is likely to be achieved since soil containing arsenic above this level also contains other contaminants that will require remediation.

Arsenic, a Contaminant of Concern at this Site, is a naturally occurring mineral that is considered by EPA to be a systemic toxicant and a human carcinogen. However, there is considerable uncertainty concerning is ability to cause cancer at low exposure levels, especially the less soluble form that occurs in contaminated soil. The Superfund program of EPA Region 4 regulates arsenic in soil as a systemic toxicant in deriving protective cleanup levels. As an additional precaution, EPA also requires soil cleanup levels to fall within the protective cancer risk range of 10 -4 to 10 -6 for the most sensitive likely receptor even though the calculated risk may be significantly over predictive. The co-location of arsenic with other contaminants that are to be addressed in soil remediation will likely result in soil arsenic residuals at the more protective end of the calculated risk range.

All Cleanup Standards have been derived from the Final Baseline Risk Assessment with the exception of Radium-226 which has been establish in accordance with the relevant and appropriate requirement (Federal Standards for the Cleanup of Land and Buildings Contaminated with Residual Radioactive Materiall 40 CFR 192).

7.0 DESCRIPTION OF REMEDIAL ACTION ALTERNATIVES

Remedial action alternatives were formulated to address the environmental contamination at the Site. Seven remedial action alternatives were considered for the Site through the Final Feasibility Study Report. The alternatives in this ROD address the source of contamination at the Site (Operable Unit 1). Alternative 6 will not be evaluated in this document since groundwater will be addressed in a separate operable unite. The seven considered remedial action alternatives include:

- Alternative 1: No Action with Continued Monitoring
- Alternative 2: Institutional Controls
- Alternatives 3a and 3b: Consolidation and Cover (Commercial and Residential)
- Alternatives 4a and 4b: Consolidation, and Capping, (Commercial and Residential)
- Alternatives 5a and 5b: Consolidation, Capping, and Saturated Zone Source Control (Commercial and Residential)
- Alternatives 7a and 7b: Consolidation, Stabilization, and Cover (Commercial and Residential).

Comment #4: A number of letters commented that EPA should remove the hazardous material from the Site either by sea, by rail, or by truck.

EPA Response #4: As presented previously in the feasibility study, off-site disposal was eliminated through the screening process. First, the excavation and removal of all contaminated hazardous substances would not be protective of human health and the environment. In fact due to the presence of elemental phosphorus and radium-226 which is air reactive, the excavation of all hazardous substances and contaminated soil would create an even greater hazard than the one that currently exists at the Site. Contaminated substances would have a greater opportunity to be released to the atmosphere. Second, the cost as documented in the feasibility study make the option impractical (the low cost estimate = $200 Million and the high cost estimate = $1.6 Million). Third, the truck traffic would be extremely high (15,000 trucks per year). Fourth, transportation by rail and by truck would unnecessarily expose or potentially expose residences in Tarpon Springs and other communities to hazardous substances. Finally, after considering all of these factor, EPA views the off-site alternative as inappropriate and unsafe. EPA rejects this alternative.

Comment #5: A few comments mentioned the fact that EPA's decision was based on old demographic data. Also, many commented that they felt that residential cleanup standards should be used.

EPA Response #5: EPA has made the decision to use residential cleanup standards which are the most conservative available. The fact that EPA is using the most stringent standards possible makes the question of demographics irrelevant.

Comment #6: A few groups asked EPA to extend the public comment period.

EPA Response #6: EPA granted an extension from August 29, 1996, until September 16, 1996.

Comment #7: Several people commented that the height and the aesthetics of the consolidation area were unacceptable.

EPA Response #7: In an effort to provide flexibility in the design and to minimize the release of hazardous substances to the environment, EPA has added flexibility to the ROD to allow more than one consolidation area to be created. A final decision concerning the number of consolidation areas will be decided during the Remedial Design phase.

Comment #8: A few comments were made concerning the groundwater (the surficial and the Floridan aquifer).

EPA Response #8: Since groundwater will not be addressed by this operable unit, comments concerning the groundwater will be addressed in a subsequent (second) Record of Decision.

Comment #9: One person commented that the consolidation area may collapse into the Floridan Aquifer.

EPA Response #9: The hydro-geologic studies that have been performed do not indicate that this is a likely outcome. On the contrary, the semi-confining layer should support the consolidation areas proposed for the Site. There is no evidence that the consolidation areas will created an unnecessary burden on the confining layer.

Comment #10: A few residents of Myers Cove wrote and expressed concern about how the remediation would affect their property and their health.